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GENERAL SITE OF PROTHONOTARY WARBLER'S NEST
At least four of the cans on the trees are to be seen

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THE PROTHONOTARY WARBLER AT LAKE OKOBOJI, IOWA.

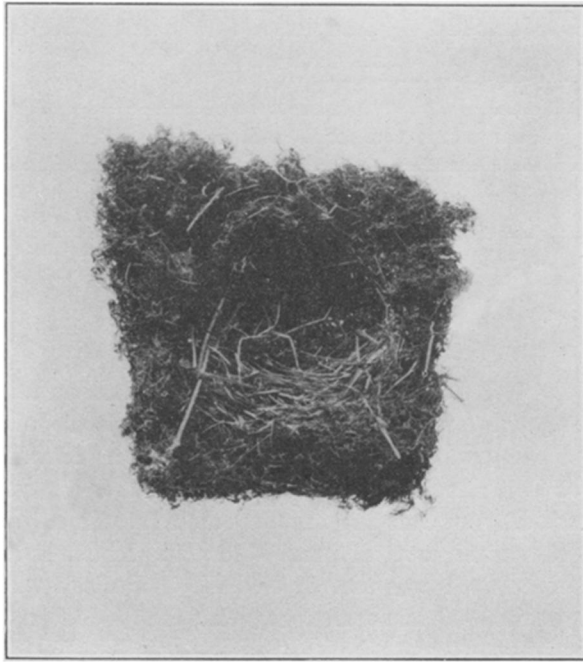
By T. C. STEPHENS.

On July 4, 1914, our entire camp* was taken on an excursion along the southwest shore of Lake Okoboji, Iowa. At noon the party was to eat lunch at a point on the west shore known as Elm Crest. They had been carried in relays across Emerson's Bay so that the first to reach the destination had some time at their own disposal before the last ones arrived.

As I came up I was met by Mr. H. C. Pollock who, with evident excitement, informed me that he had seen a bird which he thought must be a Prothonotary Warbler. I was naturally a little skeptical as to the identification, but nevertheless anxious to see what he had found.

We were in the immediate vicinity of a summer cottage owned by Mr. A. J. Goodell, which had, as yet, not been opened for the season. It was surrounded by a heavy growth of timber, mostly oaks. Very soon we heard a clear, but gentle, "*weet, weet, weet, weet,*" and Mr. Pollock exclaimed, "There is the bird"; and it was but a moment till we had our glasses focused upon her.

* Students of the Macbride (Iowa) Lakeside Laboratory.



NEST OF PROTHONOTARY WARBLER REMOVED FROM THE CAN

The head, throat, and breast appeared to be a bright lemon yellow (the orange tinge was not noticeable at this distance); the wings and tail were dark, the former appearing to have a distinctly bluish cast. Above the nearly black tip of the tail there was a distinct band of white. The black bill was unusually long for a warbler. As we watched a second bird came within view.

These characters, so clearly recognized, convinced us at once that we had, indeed, stumbled upon a pair of Prothonotary Warblers (*Protonotaria citrea*). My next thought was that the birds must be breeding; and after about five minutes' close watching, I saw one of the birds fly low and direct to an empty tin can nailed to the trunk of a tree not more than ten feet from the cottage. Immediate examination revealed a single young bird, which was almost ready to leave the nest.

The location of the nest was a thickly wooded and elevated point of land projecting into the lake on the west shore. At the highest elevation, but scarcely over fifty feet from the shore line, stood the cottage. The underbrush had been cleared away from the front of the cottage, and at the sides for a distance of perhaps a rod.

We now noticed that on the trees around the dwelling, at intervals of ten to fifteen feet, there had been put up empty tomato cans for the use of birds—especially the house wrens, which are so abundant around the lake. These were mostly at about the height of a man's uplifted hand, viz., about seven feet. The warblers had selected one whose opening faced the south.

The photograph will describe the external appearance of the nest site sufficiently.

Subsequently the nest was removed from the can for examination. Only two materials seemed to enter into its composition to any noticeable extent. The great bulk, or "foundation," consisted of a tangled mass of moss. The lining consisted of dried grass of rather coarse grade. Roughly, the cavity of the nest measured 70 mm. in diameter.

While we were watching the birds, the owners of the cottage arrived for their summer sojourn. We explained to them that the grounds were already tenanted, and found them to be very much interested in the welfare of their distinguished bird guests.

The next day Mr. Goodell walked a good mile around the lake shore, about noon, to tell me that the young warbler had left the nest that morning about nine o'clock, and that they were keeping track of its whereabouts until I could arrive. About two o'clock the young bird was banded with the number 16291, and returned to its home—the tin can—where it seemed perfectly contented to remain. By this procedure we hoped to entice the parents to visit the nest and feed, in order that we might make photographs. In this we were entirely successful, for within five minutes one of the parents had discovered the young and visited it with food.

The feeding visits were then continued with frequency during the remainder of the afternoon, and we made over a dozen exposures of the old bird in the process of feeding. Unfortunately, all but two of the plates were underexposed. The photograph here reproduced shows this bird in a somewhat different attitude from that usually depicted in the illustrated accounts of the species.

Usually, if undisturbed, the parent flew directly to the nest, alighting on the disc of tin cut out for an entrance and bent into a horizontal position. However, if at all alarmed the approach was made more cautiously. It would, under such circumstances, alight on the tree trunk or small twigs ten or fifteen feet above the nest, and descend by hopping from twig to twig; or, by simply clinging to the bark of the tree, and hopping, neither backward nor head-first, but sideways. Of course it is quite possible that the two methods of approaching the nest here mentioned may have belonged to the male and female birds respectively, but in the short time the sexes were not distinguished.

No effort was made to recognize the food brought, but in one instance a green larva was noticed. The photograph also shows some insect in the bird's bill.

It was very evident from the old bird's actions that she was trying to coax the young one out of the nest. She would remain nearby twittering and calling for a considerable time before going to the nest to deliver the food she carried. The young bird left the nest the following day (Monday) and neither young nor old birds were seen again, although the vicinity of the nest was visited a number of times later. Although no other young were seen, it is quite likely that the one we found was the last one of a larger brood to leave the nest.

The distribution of the Prothonotary Warbler in Iowa does not seem to be fully known. It has been observed along the Missouri river as far north as Mills county, Iowa, and possibly at Sioux City. Its plentiful occurrence along the upper Mississippi river is well recorded by Dr. T. S. Roberts (see the *Auk*, XVI, 1899, pp. 236-246). The only published account, apparently, of its distribution within the state of Iowa occurs in Anderson's *Birds of Iowa*, from which the following paragraph may be quoted:

"It is a bird of southern distribution and is only tolerably common along the bottom lands of the larger rivers in southern Iowa. It reaches to about its northern limit on the Iowa river in Johnson county, on the Cedar river in Blackhawk county (Peck), and the Des Moines river in Webster county (Somes). Dr. Trostler reports it as a common summer resident, but becoming scarce, in Mills county on the Missouri, while Dr. Rich reports it as rare at Sioux City. Dr. B. H. Bailey shot two males at Lansing, Allamakee county, Iowa, in 1904. The most northern record outside of the Mississippi bottoms was one male, seen along the Des Moines river in Kossuth county, by W. H. Bingaman, May 20, 1901. The bird was not taken, but identity is positive, Mr. Bingaman having found many nests in southern Illinois."

Dr. Roberts (*Auk*, XVI, p. 240) refers to an "indefinite record" for the region of Heron Lake, Minnesota, only about twenty-five miles directly north of Lake Okoboji, but which he thought was a mistake in identity. I have no information as to the authority for this record and am unable to judge as



PROTHONOTARY WARBLER ABOUT TO FEED YOUNG

to its value. This Okoboji record, however, would tend to make the Heron Lake record probable.*

An interesting problem which naturally arises is as to the route by which these birds reached the lake region (referring solely to the Okoboji record). It is not a great distance along the Des Moines river from Webster county, where the species has been recorded, to the lake region. But the Des Moines valley lies on the east of the divide, while the lakes are on the west; and there are no streams or valleys connecting. The actual distance across from the Des Moines valley to the lakes at this point would only be about eighteen miles.

However, if the birds follow the river valleys strictly in their migration (and, consequently, in extending their range) we must look to the Missouri river drainage basin for the route of the Okoboji birds. From the investigations of Loucks, Roberts, Adams, and others, it seems to be pretty well established that the species in question is very closely restricted to the river valleys in its movements, as well as its breeding.

The outlet of Lake Okoboji is through a chain of several smaller lakes (including the Upper and Lower Gar lakes, and Lake Minnewashta) into a shallow and swampy creek which empties into the Little Sioux river about a mile below the town of Milford. This river, after traversing the north-western portion of Iowa, finally empties into the Missouri river about midway between Sioux City and Council Bluffs.

Taking into account the Missouri river records above referred to, it seems very probable that the Prothonotary Warbler has pushed up the Little Sioux valley to the lake region of Iowa. We may, therefore, await with some interest reports from points in the Little Sioux valley with reference to this species.

The authors cited are as follows:

1. Loucks, W. E. The Life History and Distribution of the Prothonotary Warbler in Illinois. Bull. Ill. State Lab. Nat. Hist., IV, 1895, pp. 10-35.

* In response to an inquiry Dr. Thos. S. Roberts writes me under date of August 21, 1914, in which he states that the Heron Lake Record has never been published otherwise than by the negative reference in his article above cited. He also assures me that his reference to the bird in this locality must not be considered a "record," for he placed no reliance on the information as it reached him.

2. Roberts, Dr. Thos. S. The Prothonotary or Golden Swamp Warbler (*Protonotaria citrea*) a Common Summer Resident of Southeastern Minnesota. Auk, XVI, 1899. pp. 236-246.

3. Adams, C. C. The Migration Route of Kirtland's Warbler. Bull. Mich. Ornith. Club, V, 1904, pp. 14-21.

4. Anderson, R. M. The Birds of Iowa. Davenport. Iowa, 1907.
Sioux City, Iowa.

HABITS OF THE OLD-SQUAW (*HARELDA HYEMALIS*) IN JACKSON PARK, CHICAGO.

BY EDWIN D. HULL.

INTRODUCTION.

The following notes are the result of three winters' study of the habits of the Old-squaw in Jackson Park, Chicago, Ill., from 1912 to 1914 inclusive. It is regretted that observations could not have been made for a few years more, and it is conceivable that exceptions to some of the statements contained herein might be made through additional study, but it seems advisable to publish what observations there are, as the stock of information concerning our waterfowl is generally conceded to be woefully deficient.

PREVIOUS LITERATURE.

I have been able to find but two extensive papers on the habits of this bird, both of which have been noted carefully. In 1892 G. H. Mackay (Auk 9: 330-337. 1892) gave an excellent account in a general way of the species in New England, where the birds were observed almost exclusively on salt-water. In 1913 a more intensive study was recorded by J. G. Millais (British Diving Ducks, Vol. 1, 112-131. 1913). The notes here, however, relate mainly to the habits of the species in the Old World, and likewise on salt-water. No